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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,801	08/27/2003	William L. Bowden	08935-282001 / M-5013	3936
26161	7590	08/24/2006	EXAMINER	
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			ALEJANDRO, RAYMOND	
			ART UNIT	PAPER NUMBER
			1745	
DATE MAILED: 08/24/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,801

Applicant(s)

BOWDEN ET AL.

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-45 is/are pending in the application.
4a) Of the above claim(s) 41-45 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 19-40 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 27 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This office communication is responsive to the amendment filed 07/31/06. Applicant has overcome only most the objections; and the 35 USC 112 rejection and the double patenting rejection (substantial duplication of claim). None of the rejections under section 102 have been overcome yet. Refer to the abovementioned amendment for more details on applicant's rebuttal arguments and remarks. However, the claims are finally rejected over the same art as set forth upon below and for the reasons of record:

Election/Restrictions

1. Claims 41-45 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 03/03/03 and office action dated 03/29/06.

Claim Objections

2. Non-elected claims 41-45 are objected to because their status identifier is incorrect. They should read (withdrawn) instead of (original).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 19-24, 26, 31-32 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by the European publication 1156544 (hereinafter referred to as "*the EP'544*").

The present application is directed to a primary battery wherein the disclosed inventive concept comprises the specific cathode active material.

As to claim 19:

The EP'544 discloses an electrochemical cell comprising first and second cathodes having each one first and second active materials; an anode of an alkali metal (CLAIM 1) such as lithium (CLAIM 12); and a separator separating respective anode and cathode (P.0008). The cathode comprises a first active material including CF_x (*the irreversible high capacity material*) (CLAIM 4) and a second active material comprising $LiMnO_2$ (*the reversible low capacity material*) (CLAIM 5).

Further disclosed is that the low rate cathode material must be short-circuited with the high rate material, either by direct contact or by parallel connection through the current collectors (P0028). *Therefore, such a direct contact necessarily includes an interface which further promotes mixing the two materials at the interface.*

As to claims 20-21:

The EP'544 discloses that it is known to use $LiMnO_2$ (CLAIM 5).

As to the method limitation, viz. electrolytic or chemical manganese dioxide, it is noted that a method limitation incorporated into a product claim does not patentably distinguish the product because what is given patentable consideration is the product itself and not the manner

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in which the product was made. Therefore, the patentability of a product is independent of how it was made.

As to claims 22-24, 26 and 32:

The EP'544 uses cathodes comprising a first active material including CF_x (*the irreversible high capacity material*) (CLAIM 4) and a second active material comprising LiMnO_2 (*the reversible low capacity material*) (CLAIM 5).

Accordingly, products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property or characteristic (i.e. the specific capacity), is necessarily present in the prior art material.

As to claim 31 and 35:

The EP'544 discloses the use of Li-salts dissolved in non-aqueous solvents (P. 0036-0038). *Accordingly, products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property or characteristic (i.e. the production of gas pressure), is necessarily present in the prior art material.*

Thus, the claims are anticipated.

5. Claims 19-26, 31-32 and 35 are rejected under 35 U.S.C. 102(a) as being anticipated by the European publication 1326295 (hereinafter referred to as "*the EP'295*").

As to claim 19:

The EP'295 discloses an electrochemical cell comprising a cathode having first and second active materials; an anode of an alkali metal (CLAIM 1) such as lithium (P. 0037); and a separator (P.0005-0009). The cathode comprises a first active material including LiMnO_2 (*the*

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reversible low capacity material) (CLAIM 3); and a second active material including CF_x (*the irreversible high capacity material*) (CLAIM 3).

The EP'295 discloses that the first and second active materials are short-circuited to each other by contacting opposite sides of a current collector (P0002, 0010); additionally, active materials 36, 38 and 40 (*representing both active materials*) **touch** at their peripheries beyond the current collector 32 and 34 (P0030,0036). *Again, such periphery touching of the active materials 36, 38 and 40 necessarily includes an interface which promotes mixing the two active materials.*

As to claims 20-21:

The EP'295 discloses that it is known to use LiMnO_2 (CLAIM 3).

As to the method limitation, viz. electrolytic or chemical manganese dioxide, it is noted that a method limitation incorporated into a product claim does not patentably distinguish the product because what is given patentable consideration is the product itself and not the manner in which the product was made. Therefore, the patentability of a product is independent of how it was made.

As to claims 22-24, 26 and 32:

The EP'295 uses cathodes comprising a first active material including LiMnO_2 (*the reversible low capacity material*) (CLAIM 3); and a second active material including CF_x (*the irreversible high capacity material*) (CLAIM 3).

Accordingly, products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property or characteristic (i.e. the specific capacity), is necessarily present in the prior art material.

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As to claim 25:

The EP'295 discloses that it is known to roll, spread or press the first and second cathode active materials together (P.0024). *Thus, they are together.*

As to claim 31 and 35:

The EP'295 discloses the use of Li-salts dissolved in non-aqueous solvents (CLAIM 7). *Accordingly, products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property or characteristic (i.e. the production of gas pressure), is necessarily present in the prior art material.*

Thus, the claims are anticipated.

6. Claims 19-26, 31-32 and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Roy et al 2003/0134188.

As to claim 19:

Roy et al discloses an electrochemical cell comprising a cathode having first and second active materials and an anode of an alkali metal (CLAIM 1) such as lithium (CLAIM 8). The cathode comprises a first active material including LiMnO_2 (*the reversible low capacity material*) (CLAIM 4); and a second active material including CF_x (*the irreversible high capacity material*) (CLAIM 5).

Roy et al disclose in paragraph 0025 and illustrate in **FIGURE 2** that current collectors 32, 34 are perforated structures having on respective sides first and second active materials (P0025/FIGURE 2). Also, disclosed is that the first and second active materials are short-circuited (P0003). *Note that during charging/discharging cycles respective active materials contact one another by contacting common electrolytic medium through the perforated structure*

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of the current collector. Thus, it can be contended that the cathode, as a whole or unitary structure, does encompass a mixture thereof. Stated alternatively, Roy et al show first and second active materials that are electrochemically mixed for power generation purposes.

As to claims 20-21:

Roy et al discloses that it is known to use LiMnO_2 (CLAIM 4).

As to the method limitation, viz. electrolytic or chemical manganese dioxide, it is noted that a method limitation incorporated into a product claim does not patentably distinguish the product because what is given patentable consideration is the product itself and not the manner in which the product was made. Therefore, the patentability of a product is independent of how it was made.

As to claims 22-24, 26 and 32:

Roy et al uses cathodes comprising a first active material including LiMnO_2 (*the reversible low capacity material*) (CLAIM 4); and a second active material including CF_x (*the irreversible high capacity material*) (CLAIM 5).

Accordingly, products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property or characteristic (i.e. the specific capacity), is necessarily present in the prior art material.

As to claim 25:

Roy et al discloses that it is known to use together both first and second cathode active materials (P.0011-0012/FIGURES 1-2). *Thus, they are together.*

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As to claim 31 and 35:

Roy et al discloses the use of Li-salts dissolved in non-aqueous solvents (CLAIMS 11-13). *Accordingly, products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property or characteristic (i.e. the production of gas pressure), is necessarily present in the prior art material.*

Thus, the claims are anticipated.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 27-30 and 36-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over the European publication 1326295 (hereinafter referred to as “*the EP’295*”) as applied to claim 23 above.

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All the teachings of the EP'295 are incorporated herein by reference.

As to claim 40:

In addition, the EP'295 discloses the use of Li-salts dissolved in non-aqueous solvents (CLAIM 7).

However, the preceding reference does not expressly disclose the specific weight percent of the active materials.

As to claims 27-30 and 36-39:

The EP'295 further discloses using 91 % by weight of CF_x (P. 0023) because it has higher volumetric capacity and high energy density. The use of LiMnO_2 (CLAIM 3) for its higher rate capability (P. 0021).

In view of the above, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the specific weight percent of the active materials as instantly claimed because the EP'295 teaches that by using the specifically disclosed weight % thereof a cathode exhibiting higher energy density capable of delivering higher current pulses or higher energy within a short period of time is obtained. Furthermore, the specific cathode active material has a higher volumetric capacity; and in general they both form an electrochemical cell possessing sufficient energy density and discharge capacity. *Moreover, the EP'295 recognizes the specific cathode active material composition as a variable which achieves a recognized result, thus, the claimed range of specific materials results from the characterization as routine experimentation of an optimum or workable range. Accordingly, the specific weight content is being construed as a result-effective variable. In re Aller 105 USPQ 233, 235; In re Hoeschele 160 USPQ 809, In re Antonie 195 USPQ 6 (MPEP 2144.05 II. Optimization of*

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Ranges).

10. Claims 27-30 and 36-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) the European publication 1156544 (hereinafter referred to as "*the EP'544*") and/or b) Roy et al 2003/0134188 as applied to claim 23 above, and further in view of the European publication 1326295 (hereinafter referred to as "*the EP'295*").

The EP'544 and Roy et al are both applied, argued and incorporated herein for the reasons above.

As to claim 40:

With respect to the EP'544, the EP'544 discloses the use of Li-salts dissolved in non-aqueous solvents (0036-0038).

With respect to Roy et al, Roy et al discloses the use of Li-salts dissolved in non-aqueous solvents (CLAIMS 11-13).

However, the preceding references do not expressly disclose the specific weight percent of the active materials.

As to claims 27-30 and 36-39:

The EP'544 further discloses using 91 % by weight of CF_x (P. 0023) because it has higher volumetric capacity and high energy density. The use of $LiMnO_2$ (CLAIM 3) for its higher rate capability (P. 0021).

In view of the above, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the specific weight percent of the active materials of the EP'295 in the battery of either the EP'544 and/or Roy et al as the EP'295 teaches that by using the specifically disclosed weight % thereof a cathode exhibiting higher energy density capable of

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delivering higher current pulses or higher energy within a short period of time is obtained. Furthermore, the specific cathode active material has a higher volumetric capacity; and in general they both form an electrochemical cell possessing sufficient energy density and discharge capacity. *Moreover, the EP'295 recognizes the specific cathode active material composition as a variable which achieves a recognized result, thus, the claimed range of specific materials results from the characterization as routine experimentation of an optimum or workable range. Accordingly, the specific weight content is being construed as a result-effective variable. In re Aller 105 USPQ 233, 235; In re Hoeschele 160 USPQ 809, In re Antonie 195 USPQ 6 (MPEP 2144.05 II. Optimization of Ranges).*

11. Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) the European publication 1156544 (hereinafter referred to as "*the EP'544*"); and/or b) the European publication 1326295 (hereinafter referred to as "*the EP'295*"); and/or c) Roy et al 2003/0134188 as applied to claim 32 (*See item 16: 112 rejection supra for more details*) above, and further in view of Ilchev et al 6190800.

The EP'544 and/or the EP'295 and/or Roy et al are applied, argued and incorporated herein for the reasons above. However, the preceding prior art does not expressly disclose the lithiated manganese dioxide having the specific surface area.

Ilchev et al disclose lithiated manganese dioxide (TITLE) employed in primary lithium electrochemical cells (ABSTRACT) wherein its specific surface area is 16.5 (See TABLE 4).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in the art at the time the invention was made to use the lithiated manganese dioxide

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having the specific surface area of Ilchev et al in the electrochemical cells of either the EP'544 and/or the EP'295 and/or Roy et al because Ilchev et al teaches that such specific lithiated manganese dioxide, when used in an electrochemical cell, exhibits satisfactory initial operating voltages, and good average operating voltage and total discharge capacity. In general, it enhances voltage and discharge characteristics of the electrochemical cell.

As to the specific surface area being within the range of claim 34, it would have been obvious to a skilled artisan at the time the invention was made to make either the EP'544 and/or the EP'295 and/or Roy et al's lithiated manganese dioxide by having the claimed specific surface area because even though Ilchev et al does not overlap or lie inside the claimed specific surface area a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metal Corp. of America v. Banner* 227 USPQ 773 (Fed. Cir. 1985); *In re Woodruff* 16 USPQ 2d 1934 (Fed. Cir. 1990); *In re Aller* 105 USPQ 233 (CCPA 1955). Moreover, the normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine a satisfactory and optimum specific surface area.

Response to Arguments

12. Applicant's arguments filed 07/31/06 have been fully considered but they are not persuasive.

13. The gist of applicant's contention is premised on the assertion that the prior art of record discloses that "*the two cathode materials are not mixed*" and it does not suggest "*mixing two*

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materials together in a single layer or coating". The examiner fully disagrees with applicant's contention and presents the following in support of such a teaching:

- EP'544 further discloses that the low rate cathode material must be short-circuited with the high rate material, either by direct contact or by parallel connection through the current collectors (P0028). *Therefore, such a direct contact necessarily includes an interface which further promotes mixing the two materials at least at the interface.*

- the EP'295 discloses that the first and second active materials are short-circuited to each other by contacting opposite sides of a current collector (P0002, 0010); additionally, active materials 36, 38 and 40 (*representing both active materials*) touch at their peripheries beyond the current collector 32 and 34 (P0030,0036). *Again, such periphery touching of the active materials 36, 38 and 40 necessarily includes an interface which promotes mixing the two active materials at least at the interface.*

- Roy et al disclose in paragraph 0025 and illustrate in **FIGURE 2** that current collectors 32, 34 are perforated structures having on respective sides first and second active materials (P0025/FIGURE 2). Also, disclosed is that the first and second active materials are short-circuited (P0003). *Note that during charging/discharging cycles respective active materials contact one another by contacting common electrolytic medium through the perforated structure of the current collector. Thus, it can be contended that the cathode, as a whole or unitary structure, does encompass a mixture thereof for electrochemical purposes. Stated alternatively, Roy et al show first and second active materials that are electrochemically mixed for power generation purposes.*

14. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "*mixing two materials together in a single layer or coating*") are not recited in the rejected claim(s).

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

15. Applicant has also argued that "*the EP'295 and Roy do not qualify as prior art if the inventions covered by the pending claims were made prior to the publication date of EP'295 and the filing date of Roy*". In reply, the examiner asserts that no evidence has been provided to substantiate such statement or comment.

Conclusion

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

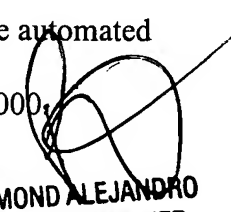
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond Alejandro
Primary Examiner
Art Unit 1745



RAYMOND ALEJANDRO
PRIMARY EXAMINER